

Application No. 10/689,649  
Reply to Office Action of March 26, 2007

IN THE DRAWINGS

The attached sheets of drawings include changes to Figures 1-4. These sheets replace the original sheets including Figures 1-4.

Attachment: Four Replacement Sheets

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-25 are pending in this application. Claims 1, 2, and 6-23 are amended and new Claims 24 and 25 are added herewith. As amended Claims 1, 2, and 6-23 and new Claims 24 and 25 are supported by the original disclosure,<sup>1</sup> no new matter is added.

In the outstanding Official Action, the drawings were objected to; Claims 1, 2, 9, and 10 were objected to; Claims 7-16 and 18-23 were rejected under 35 U.S.C. §112, second paragraph; Claims 6 and 16 were rejected under 35 U.S.C. §101; and Claims 1-8 and 16 were rejected under 35 U.S.C. §103(a) as unpatentable over Larrick, Jr. et al. (U.S. Patent No. 6,026,125, hereinafter "Larrick") in view of Muto et al. (U.S. Patent No. 4,179,727 , hereinafter "Muto").

With regard to the objection to the drawings, four replacement sheets are submitted therewith that include the label "Related Art." Accordingly, the objection to the drawings is believed to be overcome.

With regard to the objection to Claims 1, 2, 9, and 10, Claims 1, 2, 9, and 10 are amended to correct the informalities noted in the outstanding Office Action. Accordingly, the objection to Claims 1, 2, 9, and 10 is believed to be overcome.

With regard to the rejection of Claims 7-16 and 18-23 under 35 U.S.C. §112, second paragraph, Claims 7-16 and 18-23 are amended to provide antecedent basis for the terms noted in the outstanding Office Action. Claims 8, 16, 19, and 22 are amended to recite claim elements in accordance with U.S. practice. Accordingly, Claims 7-16 and 18-23 are believed to be in compliance with all requirements under 35 U.S.C. §112, second paragraph.

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<sup>1</sup>See, e.g., the specification at page 17, lines 3-20.

With regard to the rejection of Claims 6 and 16 under 35 U.S.C. §101, Claim 6 is amended to recite “generating and transmitting an n cycle pulse” and Claim 16 is amended to recite “extracting data from said pulse train detected in said detecting.” It is respectfully submitted that these two elements are concrete, useful, and tangible results. Accordingly, amended Claims 6 and 16 are believed to be in compliance with all requirements under 35 U.S.C. §101.

With regard to the rejection of Claim 1 under 35 U.S.C. §103(a) as unpatentable over Larrick in view of Muto, that rejection is respectfully traversed.

Amended Claim 1 recites in part:

a carrier wave generation means for generating a carrier wave possessing a predetermined frequency;  
a baseband pulse generation means for generating baseband pulses at time intervals equal to a fraction  $1/n$  of said predetermined frequency (n is an integer); and  
a modulation means for modulating said baseband pulses with said carrier wave and generating an n cycle pulse.

The outstanding Office Action cited the generating of 500 ps time-gating pulses of Larrick as “generating baseband pulses” as recited in Claim 1. Since the source in this embodiment of Larrick is 10 GHz,<sup>2</sup> the time gating pulses of 500 ps are  $\frac{1}{2}$  of  $1/\text{source frequency}$ . Thus, assuming *arguendo* that the time-gating pulses of Larrick are “baseband pulses,” n would be equal to 2. However, Larrick does not teach or suggest that a **2 cycle pulse** is created using the 500 ps time-gating pulses. Thus, Larrick does not teach or suggest “a modulation means for modulating said baseband pulses with said carrier wave and **generating an n cycle pulse**” as defined in amended Claim 1. It is further respectfully submitted that Muto does not teach or suggest this element either. Therefore, it is respectfully submitted that the cited references do not teach or suggest “a modulation means”

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<sup>2</sup>See Larrick, column 11, line 47.

as defined in amended Claim 1. Consequently, Claim 1 (and Claims 3-5 and 17 dependent therefrom) is patentable over the cited references.

Amended Claim 2 recites in part:

a baseband pulse generation means for generating baseband pulses with a pulse width equal to a rectangular wave pulse length that is an integer multiple of one cycle of a predetermined frequency carrier wave; and

a modulation means for modulating said baseband pulses with said carrier wave and generating an n cycle pulse with a number of cycles n equal to the integer multiple.

As noted above, the outstanding Office Action cited the generating of 500 ps time-gating pulses of Larrick as “generating baseband pulses” as recited in Claim 2. Since the source in this embodiment of Larrick is 10 GHz,<sup>3</sup> the time gating pulses of 500 ps are ½ of 1/source frequency. Thus, assuming *arguendo* that the time-gating pulses of Larrick are “baseband pulses,” the integer multiple of one cycle of the predetermined frequency carrier wave would be equal to 2. However, Larrick does not teach or suggest that a **2 cycle pulse** is created using the 500 ps time-gating pulses. Thus, Larrick does not teach or suggest “a modulation means for modulating said baseband pulses with said carrier wave and ***generating an n cycle pulse with a number of cycles n equal to the integer multiple***” as defined in amended Claim 2. It is further respectfully submitted that Muto does not teach or suggest this element either. Therefore, it is respectfully submitted that the cited references do not teach or suggest “a modulation means” as defined in amended Claim 2. Consequently, Claim 2 (and Claims 3-5 dependent therefrom) is patentable over the cited references.

Amended Claim 6 recites in part, “generating and transmitting an n cycle pulse” and amended Claim 7 recites in part, “generating and transmitting an n cycle pulse with a number of cycles n equal to the integer multiple.” As noted above, neither Larrick nor Muto teach or suggest “generating and transmitting an n cycle pulse” as defined in amended Claims 6 or 7.

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<sup>3</sup>See Larrick, column 11, line 47.

Thus, Claims 6 and 7 are patentable over the cited references for at least the reasons described above with respect to Claims 1 and 2.

Amended Claim 8 recites in part, “a detector configured to detect a baseband pulse train of  $n$  cycles by quadrature detection using a carrier wave with a same frequency as during transmission” and amended Claim 16 recites in part “detecting a baseband pulse train of  $n$  cycle pulses by quadrature detection using a carrier wave with a same frequency as during transmission.” As noted above, neither Larrick nor Muto teach or suggest the use of pulse trains of  $n$  cycles, where  $n$  is as defined in amended Claim 8. Thus, neither Larrick nor Muto teach or suggest “a detector” as defined in amended Claim 8 or “detecting a baseband pulse train of  $n$  cycle pulses” as defined in amended Claim 16. Thus, Claims 8 and 16 (and Claims 9-15 and 18 dependent therefrom) are patentable over the cited references for at least the reasons described above with respect to Claims 1 and 2.

New Claims 24 and 25 are support at least by Claims 1 and 2 and the specification at page 17, lines 3-20. New Claim 24 recites “a modulator configured to modulate said baseband pulses with said carrier wave and to create an  $n$  cycle pulse” and new Claim 25 recites “a modulator configured to modulate said baseband pulses with said carrier wave and to create an  $n$  cycle pulse with a number of cycles  $n$  equal to the integer multiple.” As noted above, Larrick does not teach or suggest that a **2 cycle pulse** is created using the 500 ps time-gating pulses. Therefore, new Claims 24 and 25 are also patentable over the cited references for at least the reasons described above with respect to Claims 1 and 2.

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Accordingly, in view of the present amendment, no further issues are believed to be outstanding and the present application is believed to be in condition for formal allowance.

An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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